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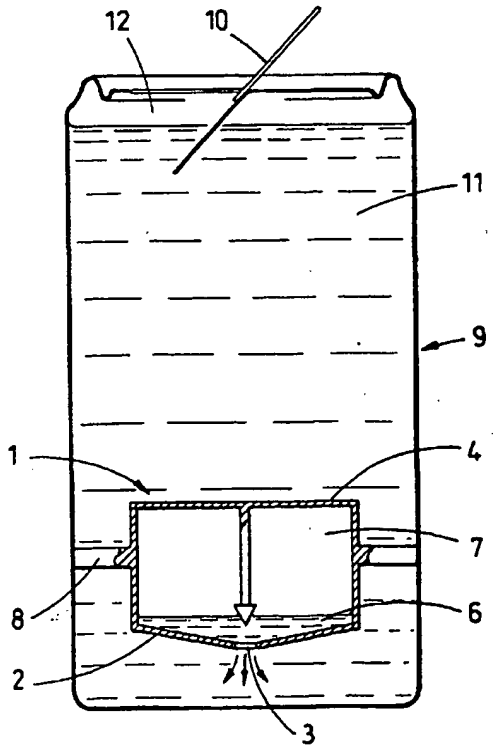
(57) Abstract

A beverage container (9) having a releasable seal (10) in an upper wall region, having a primary headspace (12) containing a first gas at a pressure above atmospheric, and containing a primary aqueous liquid content (11) saturated with the first gas, and a submerged capsule (1) containing a secondary liquid content (6) miscible with the primary liquid, such that when the releasable seal is opened and the pressure in the primary headspace drops to atmospheric the pressure difference between the interior of the capsule and atmospheric pressure causes the secondary liquid to be ejected from the capsule into the primary liquid.



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BEVERAGE CONTAINER

This invention relates to a novel container for beverages, in particular of the type which are made effervescent by the dissolution therein of a gas under pressure, the pressure of which is released when the container is opened to form bubbles of the gas in the body of the beverage liquid.

Such beverages are often supplied contained in bottles, or containers such as metal cans or transparent or translucent plastics material containers, with a ring-pull seal. Many such beverages comprise a diluted fruit juice or other liquid diluted with water. Many such beverages are initially manufactured as a liquid concentrate for subsequent dilution with water. This dilution may be either by the consumer who purchases the concentrate, or by a manufacturer or retailer who prepares a container of the diluted concentrate for sale to a consumer.

Recently, the alcoholics drinks industry has used devices in the form of a capsule or lower compartment in a drinks container, particularly a ring-pull can, which when the container is opened release a pressurised gas in the form of fine bubbles so as to produce a pronounced and stable head on the drink. Examples of such devices are disclosed in WO 91/13007 and WO 91/07326.

In the case of effervescent beverages, the preparation of a container of a beverage which contains a concentrate diluted with water containing a dissolved gas under pressure can present problems, as some concentrates which are stable on storage in their concentrated form are unstable or may degrade in other ways on storage in a form diluted with water containing the most commonly used gas, carbon dioxide. This is sometimes the case with fruit juice concentrates when diluted with water, and with other concentrates such as chocolate or malt flavour concentrates diluted with milk, when the water or milk contains dissolved carbon dioxide.

There is therefore a need for a beverage container which can overcome the problems of instability encountered with storage of such beverages.

According to this invention a beverage container is provided, having a releasable seal in an upper wall region, having a primary headspace containing a first gas at a pressure above atmospheric, and containing a primary aqueous liquid content saturated with the first gas, beneath the primary liquid surface there being a capsule containing a secondary liquid content miscible with the primary liquid, the capsule having a secondary headspace containing a second gas at a pressure above atmospheric, the capsule having a pressure sensitive closure means, such that when the releasable seal is opened and the pressure in the primary headspace drops to atmospheric, the pressure difference between the secondary headspace and atmospheric pressure causes the pressure sensitive closure to open an orifice in the wall of the capsule, the orifice in the wall of the capsule or a conduit leading thereto

being in the lower half of the capsule, and the secondary liquid to be ejected from the capsule into the primary liquid.

The beverage container may suitably comprise a bottle or a can having a ring-pull seal of conventional construction. The beverage container may suitably be a transparent container, for example made of a transparent plastics material such as polyethylene terephthalate (PET). The first gas in the primary headspace may suitably include a gas which is quite soluble in the primary liquid, such as carbon dioxide, either alone or in a mixture with air or nitrogen, so that as the pressure in the primary headspace drops to atmospheric the gas comes out of solution in effervescent bubbles. Alternatively the first gas in the primary headspace may be relatively insoluble in the primary liquid, such as nitrogen, so that effervescent bubbles are not formed.

The primary aqueous liquid content may suitably be water, or water containing dissolved flavours or sweeteners. The secondary liquid may suitably be a fruit juice concentrate, such as a blackcurrant, apple, strawberry or lime etc concentrate. Alternatively the primary liquid may be milk or a milk-based liquid, and the secondary liquid may suitably be a fruit juice concentrate as above, or a malt or chocolate or other flavour concentrate. Suitably if the container wall is transparent, the primary liquid may be colourless, e.g. water or sweetened water, or white, e.g milk or a milk based liquid and the secondary liquid may be coloured, eg a deep red such as blackcurrant concentrate or brown as in a chocolate concentrate. As such a coloured secondary liquid is ejected into the primary liquid a visible colour change having aesthetic appeal may be achieved.

The second gas in the secondary headspace may be the same gas as the first gas in the primary headspace or may be a different gas, for example nitrogen.

Suitable capsules are known but only for use in other purposes. WO 91/07326, the contents of which are incorporated herein by reference, describes suitable capsules in the form of a closed hollow insert (for insertion into a container) having means responsive to opening of the container to provide communication between the inside of the insert and beverage contained in the body of the container upon opening of the container. The hollow insert of WO 91/07326 is provided solely to inject a gas into the beverage in the container, and does not contain a secondary liquid. The present invention therefore provides a novel use for this known hollow insert as the capsule of the present invention.

The orifice in the wall of the capsule, or a conduit leading thereto, is in the lower half of the capsule, and is suitably in a lower wall, suitably at or near the lowest point(s) in the capsule, so that the secondary headspace gas exerts pressure on the surface of the secondary liquid and forces the secondary liquid downwards and out through the orifice. The term "lower" in this context means relative to the container in

which the capsule is to be contained, the releasable seal being in the upper part of the container. By such a position of the orifice all or substantially all of the secondary liquid may be ejected before any of the secondary headspace gas escapes from the capsule. Suitably the lower half, e.g the bottom wall, of the capsule may have a shape which is convex relative to the interior of the capsule, e.g a substantially conical, ogival or hemispherical bottom wall. Alternatively the capsule may have a bottom wall of a different shape to these last-described, but which may adopt a convex shape relative to the interior of the capsule when the pressure in the primary headspace drops to atmospheric. By means of such a lowest wall shape, the orifice can be located at the lowest point in the capsule, e.g the apex of the cone, ogive or hemisphere.

In the capsule of the container of this invention, the closure means may comprise a burst disk which, upon subjecting the burst disk to the pressure difference between the inside of the capsule and atmospheric pressure in the container as or after it is opened, bursts to provide an orifice through which the secondary liquid is injected into the primary liquid in the container. The closure means may alternatively comprise a manually openable valve or puncturing device connected to the container closure so that, upon opening the container the opening operation also opens the valve or punctures the capsule to eject the secondary liquid from the capsule into the primary liquid in the container. Alternatively, the closure means may comprise a pressure responsive valve which, when exposed to the pressure difference between the inside of the capsule and the atmospheric pressure in the container after opening, opens to eject secondary liquid into the primary liquid in the body of the container.

The valve may suitably consist of a bore terminating in an orifice and a plug on the outside of the capsule which fits inside the bore and which, when subjected to the pressure difference created on opening the container, is blown out of the bore to provide ejection of the secondary liquid into the primary liquid via the orifice. Such a plug is preferably a captive plug (to avoid inadvertent swallowing of the plug by a consumer) integral with the material surrounding the bore and orifice.

Another type of valve includes a cap which can be blown off or slide axially to expose at least one orifice in the wall of the capsule or in the cap. This type of valve is arranged so that the cap is subjected to the pressure difference between the inside and outside of the capsule and this acts to open the cap to expose the at least one orifice and thereby allow secondary liquid to be ejected via the at least one orifice into the primary liquid in the container.

In a further arrangement the valve may have the form of a pressure responsive valve closure member which is exposed to any pressure difference between the inside of the capsule and the inside of the container and which moves of distorts to open an orifice to allow ejection of secondary liquid from inside the capsule into the primary

liquid in the container. One form of this valve comprises a captive resilient bung inserted through an orifice in the wall of the capsule which, when subjected to a sufficient pressure differential, flexes to allow secondary liquid to be ejected from inside the capsule through the opening into the primary liquid in the body of the container.

Another form of this type of valve comprises a seating surrounding the inside of an orifice and a valve closure member which seats against and forms a seal with the seating. Preferably the capsule includes two opposed faces with the orifice and seating formed on one face and the valve closure member attached to the inside of the other face and extending to the seating on the inside of the one face. By forming the capsule from slightly resilient material such as a plastics material at least one of the opposed faces flexes outwards as a result of pressure differences between the inside and outside of the capsule after the container is opened. Such flexing of the face causes relative movement between the seating and the valve closure member to unseat the valve closure member to allow secondary liquid from inside the capsule to pass between the seating and valve closure and to be ejected through the orifice into the primary liquid in the body of the container. By means of such resilience the one or other of the opposed faces may be constructed to snap between states in which the valve is closed and the valve is opened.

It is preferred that the capsule is precharged with the second gas such as carbon dioxide, nitrogen, or a mixture of these, and with a suitable quantity of the secondary liquid, during manufacture. The capsule is preferably precharged to a pressure above atmospheric. When the capsule is precharged to a pressure above atmospheric it may be held under this pressure whilst it is inserted into the container and the entire container and capsule held under this pressure whilst it is filled with the primary liquid.

Alternatively the capsule may be precharged with second gas and secondary liquid, and is stable and completely closed when exposed to the atmosphere before being inserted into the container. This may be achieved by having the capsule filled with secondary gas at substantially atmospheric pressure in the secondary headspace and with the secondary liquid, and for the pressure inside the capsule to be built up after the capsule is placed in the container and the container filled with beverage. There are various ways in which this can be achieved.

Firstly, the capsule may be wholly, or partly, made from a material which is permeable by first gas used to fill and pressurize the container. In this way, during a period after filling, e.g from one to six weeks, the permeable nature of the capsule allows first gas in solution in the primary liquid inside the container, for example carbon dioxide, to permeate through the walls of the capsule until equilibrium is reached between the second gas inside the capsule and the first gas inside the primary

headspace of the container.

Another way in which the pressure inside the capsule can be built up is for the capsule to be arranged to change its volume after it has been placed inside the container and the container is filled with primary liquid and sealed. This can be achieved either as a result of the increase in pressure which occurs inside a filled container after it is sealed, and particularly during a pasteurisation step or, alternatively, as a result of a change in temperature, again during a pasteurisation step which occurs after the container has been filled.

When the capsule changes its volume as a result of the increase in pressure that builds up in the container after it is filled and sealed the capsule may be arranged to collapse or concertina and may include a mechanical lock so that, once collapsed or concertinad, the capsule is then held into its collapsed or concertinad condition irrespective of subsequent changes in pressure inside the container. On collapsing, the pressure inside the capsule increases considerably as a result of the reduction in the volume of the capsule and, if the capsule is locked into its collapsed state, it then holds gas at a much higher pressure than when first inserted into the container. One way in which the capsule can be shaped so that it collapses is for it to include one or more domed faces which, upon application of a pressure evert into a stable state.

Another way in which the capsule can be made to contract and compress second gas contained within it is to manufacture the capsule from biaxially stretched plastics material. Such material is biaxially stretched whilst hot and then cooled to lock it into its biaxially stretched orientation. However, as soon as such material is subsequently heated its plastic memory causes it to shrink. Thus, the capsule may be made from a biaxially oriented material such as biaxially oriented polyethylene terephthalate (PET) and filled with gas substantially at atmospheric pressure. Then on pasteurisation of the filled container the capsule shrinks considerably in volume so compressing the gas within the capsule substantially to the pressure subsisting within the container. As the container and its contents cool the capsule is again locked into shape.

The capsule may in one form include a flexible wall including an orifice surrounded by a valve seat with the valve closure member initially held by the flexible wall in permanent contact with the valve seat. However, once the capsule has been subjected to the increase in pressure that builds up inside a container after it is closed and sealed the wall of the capsule flexes inwards and brings the valve closure member into engagement with a valve seat on an opposite face of the capsule.

Means may be provided to interlock the valve closure member and the valve seat so that when the flexible wall of the capsule is in its inwardly flexed condition the valve closure member and valve seat are interlocked. Whilst the capsule is subjected to an external pressure within the container which is higher than or equal to

the pressure inside the capsule the valve closure member is held against the seat to close the capsule. However, as soon as the pressure inside the capsule is greater than the external pressure, the flexible wall flexes outwards and, since the valve closure member is held by the flexible wall it is pulled away from the valve seat to allow secondary liquid from inside the capsule to be ejected through the orifice into the primary liquid.

When the capsule includes two opposed faces with the orifice and valve seat formed on one face and the valve closure member attached to the inside of the opposed face and extending to the valve seat, with the opposed faces arranged to flex as a result of pressure differences between the inside and outside of the capsule, a physical change in the properties and characteristics of the opposed faces can be caused during pasteurisation with the result that the pressure at which the valve opens varies.

The orifice should be of sufficient size that the secondary liquid is ejected at a rate such that it is all ejected in the short period of time between opening the container and dispensing or consuming the contents. The orifice or capsule may be provided with liquid guide vanes or other swirl-causing means to cause the secondary liquid to mix efficiently with the primary liquid when it is ejected through the orifice.

Preferably the capsule is charged with a second gas at a pressure above atmospheric and with secondary liquid before being placed in the container and includes valve means which are arranged so that they initially resist a substantial pressure difference and yet which, after having been loaded into the container and the container having been filled and sealed have very much lower pressure differential thresholds. Again, use can be made of the subsequent pasteurisation treatment which the container is subjected to after filing to bring about a change in the relief pressure of the valve means.

Typically, for example, the capsule is precharged with a secondary gas to a pressure of 2 or 3 Bar and with secondary liquid the pressure responsive valve is arranged to remain closed under this pressure difference. After the capsule is placed in a container and the container filled with primary liquid and sealed the container may then be subjected to a pasteurisation step at an increased temperature.

Under such conditions the pressure inside the container can build up to about 5 Bar thus generating a pressure difference of 1 or 2 Bar between the inside and outside of the capsule. At a pasteurisation step at elevated temperature the pressure difference causes the opposed faces of the capsule to be urged together and at the elevated temperature they are stretched inelastically in a generally radial direction. In addition to the capsule deformation, the elevated temperature can cause relaxation of the internal stresses within the capsule. The radial stretching and relaxation reduces the radial tension that exists in them and thus changes the pressure differential that is

required to open the valve.

When the capsule includes a valve with a pressure responsive member the capsule may be both pre-charged and made from a permeable material. In this way if the capsule is over-charged or prematurely exposed to a significant pressure difference some of its contents are vented but, after the container is filled and pressurised the pressure inside the capsule builds up as a result of permeation through its side wall during a period, e.g one to six weeks after filling. This has the further advantage of accommodating any slight leakage from the pressure responsive valve during storage of the container.

The capsule may be formed in two parts, a main body portion and a separate lid, typically respectively comprising the valve closure and the valve orifice. In this way, during manufacture and assembly of the capsule the body can be precharged easily with second gas and secondary liquid.

The amount of second gas introduced into the capsule is preferably metered to provide the required final pressure in the secondary headspace. The lid is preferably a simple snap-fit on the body but, alternatively it may for example be connected by a screw-thread, by welding or by an adhesive.

The capsule may be an interference fit with the side wall of the container so that it is held in position. Such an interference fit may be achieved by providing the capsule with integral or attached radial spider legs. Alternatively, the capsule may merely float in the primary liquid in the container and be weighted so that the part from which secondary liquid is ejected on opening the container is always arranged towards the base of the capsule. When the container is formed by a can the can may be locally deformed to trap the capsule at a particular location. In a further version portions of the capsule are placed between a side wall of the container and its lid so that the capsule is held captive once the lid fixed on the container.

With the arrangement in accordance with this invention the capsule is always completely closed when it is inserted into the container and thus, the container requires no additional flushing and purging steps other than those required for a conventional container filling operation.

The invention further provides a method of preparing a beverage comprising a primary aqueous liquid mixed with a secondary liquid, within a beverage container, by the use of a beverage container as described herein to mix the secondary liquid with the primary aqueous liquid.

The invention also provides a method of improving the stability on storage of a beverage comprising a primary aqueous liquid and a secondary liquid being a fruit juice concentrate or chocolate or malt flavour concentrate, comprising providing the primary aqueous liquid and the secondary liquid as the respective primary and secondary liquids of a beverage container as described herein.

The invention also provides a method of manufacturing a beverage container having a releaseable seal in an upper wall region, containing a primary liquid, which comprises the step of providing within the container a capsule which contains a secondary liquid, miscible with the primary liquid and having a secondary headspace containing a gas at a pressure above atmospheric.

The invention will now be described by way of example only with reference to the acompanying drawings:

Fig 1 shows a capsule of the invention,

Fig 2 shows an altenative capsule of the invention, and

Fig 3 shows a beverage container of the invention incorporating the capsule of Fig 1.

Referring to Fig 1, a capsule (1) comprises a generally cylindrical body of plastics material having a resilient flexible end wall (2) made of plastics material. In one end wall (2) is an orifice (3), the rim of the orifice (3) forming a valve seat. Projecting from the opposed end wall (4) is a valve closure member (5) which extends to the valve seat around the orifice (3). The end wall (2) is inwardly biased by its resilience so that the valve closure member (5) is seated against the valve seat around orifice (3), and may be interlocked with the orifice (3) by a snap-fit means, to seal the orifice as a pressure sensitive closure means. Within the capsule (1) is a secondary liquid (6), such as a blackcurrant concentrate, and above this concentrate is a secondary headspace (7) containing a second gas, such as carbon dioxide or nitrogen, at a pressure above atmospheric.

When there is little or no pressure difference between the second gas in the secondary headspace (7) and the outside of the capsule (1) the orifice is sealed by the valve closure member (5) seating against the surrounding valve seat as shown in Fig 1A. The wall (2) is of a concave shape relative to the interior of the capsule (1) in this state. When the pressure of the second gas in the secondary headspace (7) exceeds that outside the capsule (1), the end wall (2) deforms outwardly as shown in Fig 1B so that the orifice (3) moves away from the valve closure member (5) and is opened, and the secondary liquid (6) is ejected through the orifice (3). In this opened state, as shown in Fig 1B the wall (2) deforms into a convex shape relative to the interior of the capsule (1), i.e a conical shape with the orifice (3) at the apex of the cone, this now being the lowest point in the capsule. The capsule (1) is provided with radial spider legs (8) which enables the capsule (1) to be retained within a container.

Referring to Fig 2, a capsule (1) again comprises a generally cylindrical body of plastics material having a resilient flexible end wall (2) made of plastics material. In one end wall (2) is an orifice (3), the rim of the orifice (3) forming a valve seat. Projecting from the opposed end wall (4) is a valve closure member (5) which extends to the valve seat around the orifice (3). In the capsule of Fig. 2, the wall (2) is

of a conical shape convex to the interior of the capsule (1) with the orifice (3) at the apex of the cone, i.e at the lowest point of the capsule (1). The walls (2) and (4) are biassed so as to keep the valve closure member (5) in place in the orifice (3) as shown in Fig. 2A. When the pressure of the second gas in the secondary headspace exceeds that outside the capsule (1), the end wall (4) deforms outwardly so that the valve closure member (5) moves away from the orifice (3) in the upward direction as shown in Fig. 2B, so that the orifice (3) is thereby opened, and the secondary liquid (6) is ejected through the orifice (3). The capsule (1) is again provided with radial spider legs (8) which enables the capsule (1) to be retained within a container.

The capsules (1) of Figs 1 and 2 may be integrally made, or alternatively the walls (2) or (4) may be made separately and fitted to the remainder of the capsule (1) by means of a snap, fit, screw, weld etc connection. Such manufacturing methods are entirely conventional in the art.

Referring to Fig 3, a capsule (1) of Fig 1 is shown retained by spider legs (8) within a container (9) being a can with a ring pull closure (10). The capsule (1) is oriented so that the orifice (3) of the capsule is in a downward facing wall (2). The container (9) contains water as a primary aqueous liquid (11) in which is dissolved carbon dioxide, and above which is a primary headspace (12) containing carbon dioxide at a pressure above atmospheric. When the closure (10) is closed as shown in Fig 3A, the pressure in the primary headspace (12) is substantially the same as that in the secondary headspace (7) and the orifice (3) is closed as described above.

When the ring pull closure (10) is opened as shown in Fig 3B, the pressure in the primary headspace drops to atmospheric, and the pressure difference between the secondary headspace (7) and atmospheric causes the orifice to be opened as described above, and the secondary liquid (6) to be ejected into the primary liquid (11) and to mix therewith. With the orifice (3) at the lowest point in the capsule (1), the secondary headspace gas (7) is able to exert a downward force on the surface of the secondary liquid (6), ejecting the secondary liquid (6) substantially completely before the gas (7) is able to escape through the orifice (3).

The reduction in pressure of the primary headspace (12) when the container (9) is opened to the atmosphere causes the dissolved carbon dioxide in the water (11) to come out of solution and form effervescent bubbles (not shown).

The capsule of Fig 2 is used analogously.

Claims:

1. A beverage container, having a releasable seal in an upper wall region, having a primary headspace containing a first gas at a pressure above atmospheric, and containing a primary aqueous liquid content saturated with the first gas, beneath the primary liquid surface there being a capsule containing a secondary liquid content miscible with the primary liquid, the capsule having a secondary headspace containing a second gas at a pressure above atmospheric, the capsule having a pressure sensitive closure means, such that when the releasable seal is opened and the pressure in the primary headspace drops to atmospheric, the pressure difference between the secondary headspace and atmospheric pressure causes the pressure sensitive closure to open an orifice in the wall of the capsule, the orifice in the wall of the capsule or a conduit leading thereto being in the lower half of the capsule, and the secondary liquid to be ejected from the capsule into the primary liquid.

2. A beverage container according to claim 1 wherein the orifice in the wall of the capsule, or a conduit leading thereto, is in the lower half of the capsule.

3. A beverage container according to claim 1 wherein the container comprises a bottle or can having a ring-pull seal.

4. A beverage container according to claim 1 wherein the first gas includes carbon dioxide.

5. A beverage container according to claim 1 wherein the first gas is relatively insoluble in the primary liquid.

6. A beverage container according to any one of the preceding claims wherein the primary liquid is water or water or milk or a milk-based liquid containing dissolved flavours and sweeteners and the secondary liquid is a fruit juice concentrate or chocolate or malt flavour concentrate,.

7. A beverage container according to any one of the preceding claims having a transparent container wall.

8. A beverage container according to any one of the preceding claims, wherein the capsule comprises a closed hollow insert, for insertion into a container, having means responsive to opening of the container to provide communication between the inside of the capsule and beverage contained in the body of the container upon

opening of the container.

9. A beverage container according to any one of claims 1 to 8, substantially as hereinbefore described, with reference to the accompanying drawings.

10. A method of preparing a beverage comprising a primary aqueous liquid mixed with a secondary liquid, within a beverage container, by the use of a beverage container as claimed in any one of the preceding claims.

11. A method of manufacturing a beverage container having a releaseable seal in an upper wall region, containing a primary liquid, which comprises the step of providing within the container a capsule which contains a secondary liquid miscible with the primary liquid, and having a secondary headspace containing a gas at a pressure above atmospheric.

12. A method of improving the stability on storage of a beverage comprising a primary aqueous liquid and a secondary liquid being a fruit juice concentrate or chocolate or malt flavour concentrate, comprising providing the primary aqueous liquid and the secondary liquid as the respective primary and secondary liquids of a beverage container as claimed in any one of claims 1 to 8.

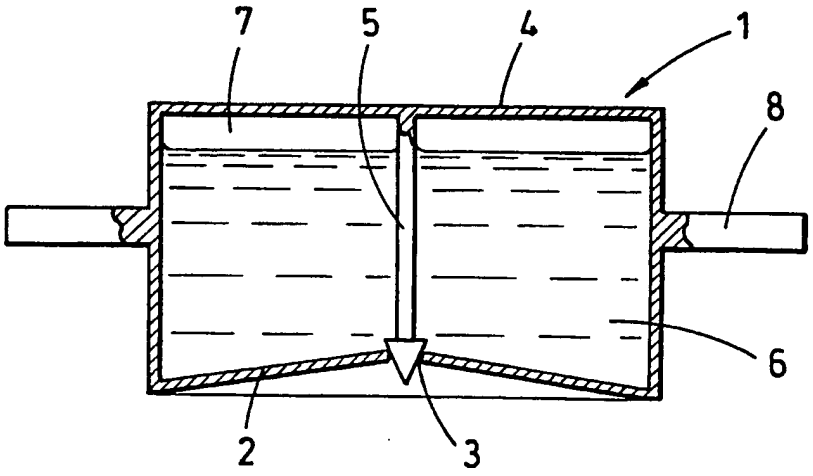

Fig. 1A

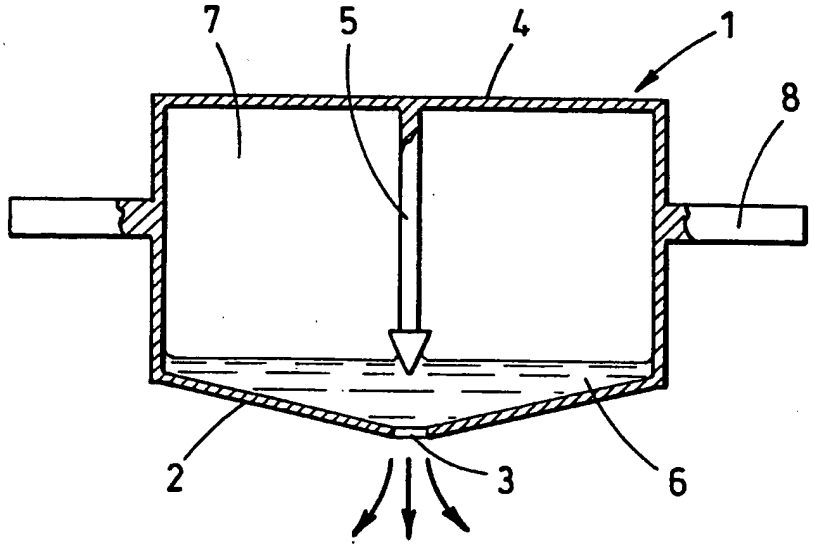

Fig. 1B

Fig. 1

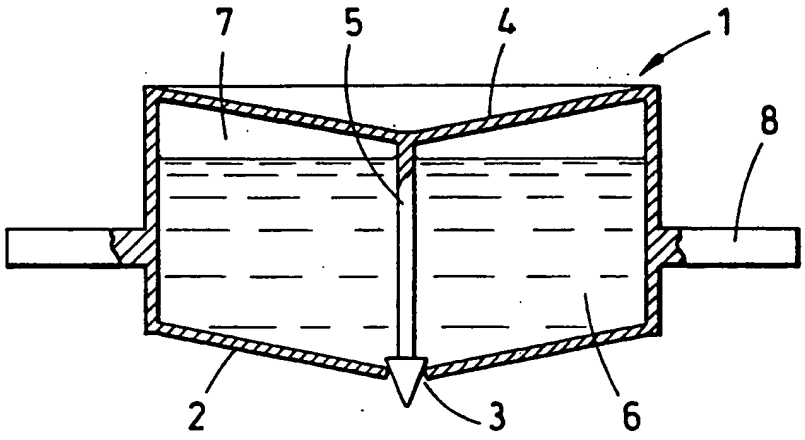

Fig. 2A

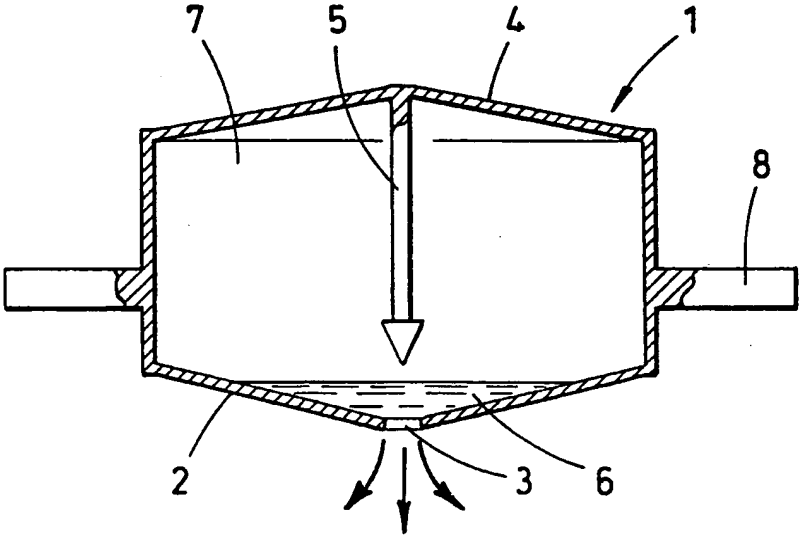

Fig. 2B

Fig. 2

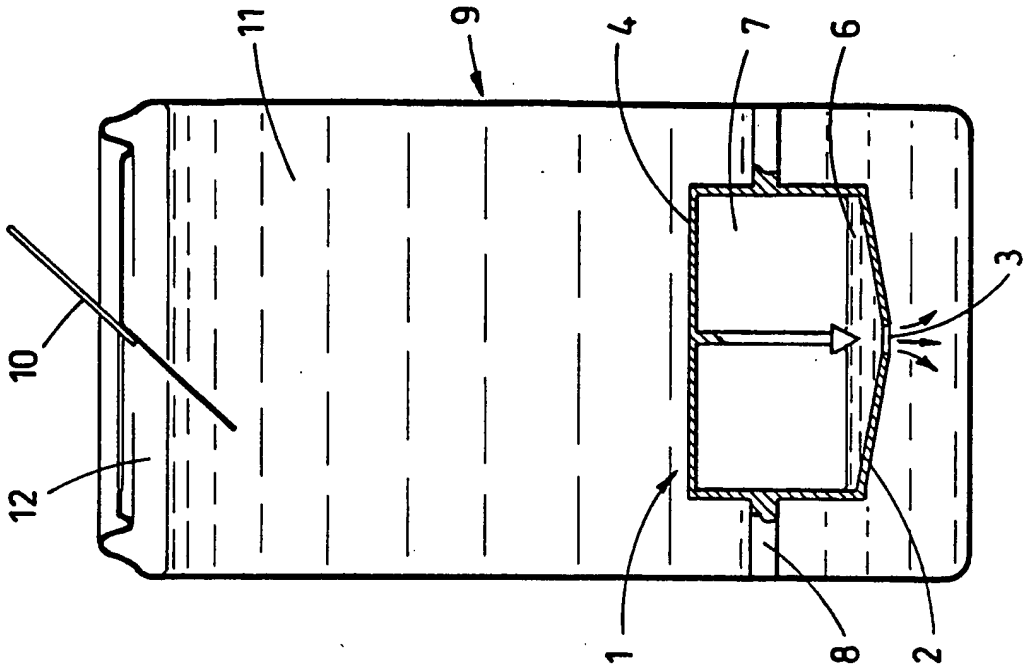

Fig.3B

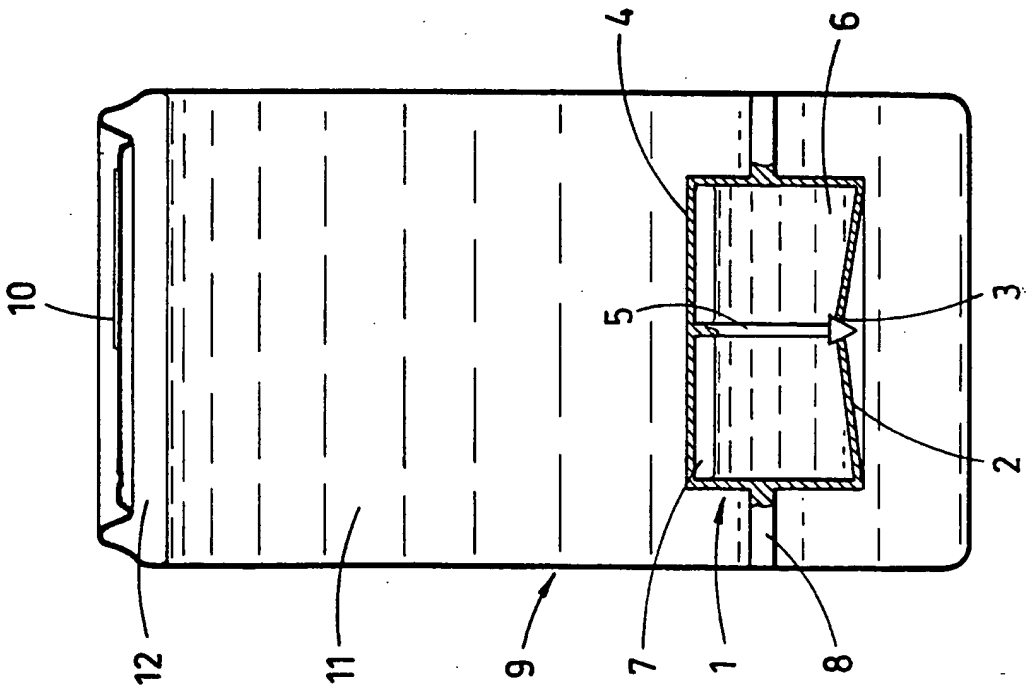

Fig.3A

Fig. 3

INTERNATIONAL SEARCH REPORT

Intern al Application No
PCT/EP 94/02491

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D81/32 B65D79/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A,4 333 581 (FLANSBURG) 8 June 1982 see the whole document ---	1-4,6,8, 10-12
Y	WO,A,91 07326 (WHITBREAD & CO PLC.) 30 May 1991 cited in the application see the whole document ---	1-4,6,8, 10-12
A	WO,A,92 00896 (PRICE DEVELOPMENTS LTD.) 23 January 1992 see abstract; figures ---	1,2,8
A	US,A,3 305 368 (BOURELLE) 21 February 1967 see column 1, line 20 - line 28; figures --- -/--	1,3,4,6, 10-12

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search	Date of mailing of the international search report
22 November 1994	29. 11. 94

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Gino, C

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INTERNATIONAL SEARCH REPORT

Intern al Application No
PCT/EP 94/02491

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 448 200 (GUINNESS BREWING WORLDWIDE LTD) 25 September 1991 see abstract; figures see column 5, line 6 - line 15	1,2,4,7

INTERNATIONAL SEARCH REPORT

Interr. al Application No
PCT/EP 94/02491

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		EP-A-	0502059	09-09-92
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US-A-3305368		NONE		
EP-A-0448200	25-09-91	GB-A-	2240960	21-08-91
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